

IN THE ABSTRACT:

Please cancel the current abstract and insert the following.

An X-ray projection exposure apparatus includes a mask chuck, a wafer chuck, an X-ray illuminating system, and an X-ray projection system. The mask chuck holds a reflection X-ray mask having a mask pattern thereon. The wafer chuck holds a wafer onto which the mask pattern is transferred. The X-ray illuminating system illuminates the reflection X-ray mask, held by the mask chuck, with X-rays. The X-ray projection optical system projects the mask pattern of the reflection X-ray mask onto the wafer held by the wafer chuck with a predetermined magnification. The mask chuck includes a mechanism for generating static electricity for attracting and holding the reflection X-ray mask by an electrostatic force. The invention also includes a device manufacturing method using such an X-ray projection exposure apparatus to transfer a mask pattern onto the wafer using the X-ray projection exposure apparatus.

-- An exposure apparatus includes a chuck for holding an object and an optical system for directing light from a light source to the object held by the chuck. The optical system includes a multilayer film mirror which has a concave reflecting surface, wherein an area of contacting portions of the chuck is set so that the contact portions area of the chuck is at most 10% of an area of the object held by the chuck. --